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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/872,456	05/31/2001	Clifford N. Click	SUNMP017	3015

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EXAMINER

KENDALL, CHUCK O

ART UNIT PAPER NUMBER

2122

DATE MAILED: 08/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/872,456

Applicant(s)

CLICK ET AL.

Examiner

Chuck O Kendall

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

DETAILED ACTION

1. This action is in response to the application filed 05/31/01.
2. Claims 1-20 have been examined.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1-3,7-13,16-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Geva USPN 6,539,541 B1.

Regarding claim 1, Geva anticipates a method for loop optimization within a dynamic compiler system comprising: executing a computer program having a loop structure, wherein the loop structure includes a loop exit test to be performed during each loop iteration (8:1-20);

compiling the loop structure during the execution of the computer program (4:15-29) ; and creating an unrolled loop structure during the compiling operation, wherein the unrolled loop structure includes plurality of loop bodies based on the original loop structure (8:1-50).

Regarding claim 2, a method as recited in claim 1, wherein the unrolled loop structure includes the loop exit test (8:1-20).

Regarding claim 3, a method as recited in claim 2, wherein the loop exit test is performed once for each iteration of the plurality of loop bodies (8:1-10, see code).

Regarding claim 7, a method as recited in claim further including the operation of performing clean up (3:1-10).

Regarding claim 8, a method as in claim 7 wherein the loop clean-up includes optimizing multiple fall-in loop structures (3:1-10).

Regarding claim 9, a method as recited in claim 7 wherein the loop clean-up includes optimizing nested loop structures having invariant structures (3:1-10,4:5-10 for loop invariant).

Regarding claim 10, Geva anticipates an interpreter capable of interpreting instructions of a computer program during execution of the computer program (4:65), the interpreter being further capable of requesting that a particular instruction be compiled (4:35-40); and

a compiler capable of compiling the instructions as requested by the interpreter, wherein the compiler is further capable of creating an unrolled loop structure when compiling an original loop structure of the computer program, wherein the unrolled loop structure includes plurality of loop bodies based on the original loop structure (8:1-50).

Regarding claim 11, see reasoning in claim 2.

Regarding claim 12, see reasoning in claim 3.

Regarding claim 13, see reasoning in claim 4.

Regarding claim 16, see reasoning in claim 1.

Regarding claim 17, see reasoning in claim 2.

Regarding claim 18, see reasoning in claim 7.

Regarding claim 19, see reasoning in claim 8.

Regarding claim 20, see reasoning in claim 9.

### Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior

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art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-6, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geva USPN 6,539,541 B1 as applied in claim 1, in view of Srivastava USPN 5,457,799.

Regarding claims 4, Geva discloses all the claimed limitations as applied in claim 1 above. Geva doesn't explicitly disclose building a loop tree based on loops included in the computer program. However, Srivastava does disclose this limitation (4:7-15). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Geva and Srivastava, because using loop regions in the form of trees makes calling more efficient (Srivastava 4:10-15).

Regarding claim 5, a method as recited in claim 4, wherein nested loops are represented in the loop tree as child nodes (Geva, 8:1-10, see code).

Regarding claim 6, a method as recited in claim 5 wherein parallel loops are represented in the loop as nodes level of the loop tree (Geva, 8:24, see parallelism).

Regarding claim 14, see reasoning in claim 5.

Regarding claim 15, see reasoning in claim 6.

#### Correspondence Information

6. Any inquires concerning this communication or earlier communications from the examiner should be directed to Chuck O. Kendall who may be reached via telephone at (703) 308-6608. The examiner can normally be reached Monday through Friday between 8:00 A.M. and 5:00 P.M. est.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Dam *can be reached* at (703) 305-4552.


Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

*For facsimile (fax) send to 703-7467239 official and 703-7467240 draft*

*Chuck D. Kendall*

Software Engineer Patent Examiner

United States Department of



**TUAN Q. DAM**  
**PRIMARY EXAMINER**